DOCUMENT RESUME

ED 187 454 PS 011 470

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TITLE Developmental Studies of Pretend Play.
PUB DATE Apr 80
NOTE 9p.; Paper presented at the Biennial Southeastern Conference on Human Development (6th, Alexandria, VA, April 17-19, 1980).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cognitive Development; Conservation (Concept); Feedback; *Influences; Instructional Innovation; Low Income Groups; *Preschool Children; *Pretend Play; *Problem Solving; *Training Methods

ABSTRACT

This paper briefly reports on a series of studies that explore the relationship between symbolic or pretend modes of reasoning and cognitive processes which underlie conservation of quantity. It is hypothesized that the mental transformations which the child makes while playing a game of make-believe, namely, the transformation from his original identity to a pretend identity and back to the original and enduring identity, are evidence of a primitive form of reversible thought operation and that this form of reversibility is akin to the reversibility that characterizes concrete operational thought. This hypothesized link was investigated by studying the effects of training in pretend play on performance on the conservation problem with preschool children. Five studies were conducted to address the following research questions: (1) the effectiveness of pretend play plus verbal inquiry training, (2) the comparative effectiveness of pretend play training vs. pretend play plus verbal inquiry training, and duration of these effects; (3) the comparative effectiveness of pretend play vs. direct conservation training vs. pretend play plus conservation training; (4) the comparative effectiveness of the adult initiated play approach vs. an approach in which the child teaches the adult; and (5) the comparative effectiveness of pretend play training vs. direct conservation training with low income children. A brief description of the methods and results of each study is provided. (SS)

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PS011470

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Developmental Studies of Pretend Play*

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* Paper delivered at the Southeastern Conference on Human Development, April 1980, Alexandria, Virginia

Developmental Studies of Pretend Play

In recent years psychologists have shown a renewed interest in the nature of child play and its potential significance for cognitive development. I would like to report on a series of studies that explored the relationship between symbolic or pretend play and cognition. These studies were designed to replicate the earlier findings reported by Golomb & Cornelius (1977), and to identify the effective symbolic play variables. The central question which has guided this research concerns the relationship between pretend modes of reasoning and thought processes which underly conservation of quantity. Piaget defines conservation as the cognition that certain properties of a stimulus array remain invariant despite certain transformations, and this definition specifies that concrete operational thought, with its core property of reversibility, is essential to the solution of the conservation problem.

What do we know about pretend or symbolic play reasoning and how do we conceptualize the cognitive processes that underlie symbolic play? Pretend play is characterized, above all, by the child's adoption of a role and by various forms of object substitutions or transformations, and thus the question becomes: What are the cognitive capacities which permit these transformations in make-believe play? I suggest that the mental transformations which the child makes while playing a game of make-believe, namely, the transformation from his <u>original identity</u> to a <u>pretend identity</u> and <u>back to the original</u> and <u>enduring identity</u>, is evidence of a primitive form of reversible thought operation and that this form of reversibility is akin to the reversibility that characterizes

concrete operational thought. If indeed such a link exists between these seemingly diverse modes of reasoning, we might predict that training in pretend play that draws the child's attention to the mental and reversible transformations which he spontaneously makes in his games, will facilitate the application of these intuitive reversible thought operations to the solution of the conservation problem.

In our first study Cheryl Cornelius (1977) and I selected, on the basis of conservation pretests, a group of 15 nonconserving four year old middle-class children, and we engaged them over a three day period in short pretend games, approximately 15 minutes each, followed by a verbal inquiry. This inquiry focused on the dual identity of the play object, namely, its pretend function and its function in real life. The child was questioned regarding the original identity, its transformation, and the ultimate return to the original identity of the play object. Conservation posttests which followed pretend play training indicated that 10 out of 15 (67%) children gave correct conserving judgments and explanations on at least some of the tasks. This was not matched by the control group which had played constructive games for a comparable amount of time.

In the second study, conducted with Jerry Adams (1978), we wished to isolate the specific aspects of pretend play that facilitate the induction of conserving responses. We wanted to know whether it was pretend play per se or pretend play with verbal inquiry that was the effective mediator. We also examined the duration over time of the cognitive gains, and we included two delayed posttests. The results indicated that only

pretend play with inquiry was an effective mediator of conserving responses, and that the differences between the experimental and control groups reached statistical significance only on the third posttest ($p < .01$), 23 days after completion of the training. The scores for the pretend play-group-with-inquiry increased gradually from posttest 1 to posttest 3. The results of this study alerted us to the impact of procedural modifications, and demonstrated that the symbolic play training effect was contingent upon specific training and testing conditions. In the Golomb & Adams study we employed 8 conservation pretest problems, requiring 6 separate answers to each one of the problems. Thus, we inadvertently reinforced the child's nonconserving responses 48 times on the pretest. Apparently, this masked the symbolic play training effect, which emerged only fully on the third posttest ($p < .01$), three weeks after training was completed.

The third study, conducted jointly with Laura Friedman (1979), compared the effectiveness of pretend play training, direct conservation training, and a combination of pretend play and conservation training. Only the combined condition yielded significantly better results than the control groups ($p < .05$); both pretend play and conservation training produced only modest effects. Interestingly, the scores from posttest 1 to posttest 2 increased for the pretend play training group, decreased for the conservation training group, and remained stable for the combined group. Thus, we can say that the original play training effect of the first study was replicated, but its magnitude reduced. This attenuated effect made us aware of examiner variables. It became clear to us that we had to maximize the child's attention to the tasks, and to assure his

active participation and involvement in the development of a pretend theme. We also took great care to train the experimenter in play induction techniques designed to involve the child in symbolic play, and to focus his attention on the crucial section of the verbal inquiry which emphasized the rules that govern the transformation of the play object from its original identity to the pretend identity and back to the original identity. Unless we assured the child's attention to this phase of the training, there was indeed no reason to predict a play training effect on conservation attainment. Let me stress, however, that even if these training conditions are met, the child still has to extract the reversibility rule from the context of pretend play and to apply it across domains to the conservation task.

In the fourth study, conducted with Elain Gowing (1979), we compared the effectiveness of the adult initiated games strategy, which we had used so far, with a new method which asked the child to teach the adult a pretend game. The verbal inquiry phase was also incorporated into this format. The results were reassuring: the adult initiated games replicated the magnitude of the original findings (67% conserved on the posttest); however, the child initiated game was significantly more effective than the adult initiated one (82% conserved on the posttest).

The fifth and last study that I wish to report on was conducted jointly with Shoshana Bonen. (1980). For the first time we selected children from distinctly low income families, kindergarteners aged 5-6 years. Following the conservation pretests which established the non-conserving status of our 60 subjects, we gave our 40 experimental subjects

a single conservation training session (4 problems), utilizing a method found to be highly effective, namely, verbal rule provision and corrective feedback. The experimenter demonstrated a correct judgment and explanation, and verbally corrected the child's own response. (Apropos, most published conservation training studies, typically, employ middle-class children). The following day we posttested the children and discovered that only 10% (4 children) had benefited from the training. Next, we assigned one half of our nonconservers to an additional training condition, namely, to pretend play training over three days. Conservation posttests indicated that the pretend play training was an effective inducer of conserving responses in 50% of our nonconservers, a finding which was unmatched by the control group ($p < .05$). Thus pretend play training successfully induced conserving responses in persistent nonconservers, namely, in children who did not benefit from the early conservation training session. This study thus provides evidence for the remedial potential of pretend play training.

The significance of our studies lies in the demonstration that pretend or symbolic play training can activate problem solving strategies, spontaneously engaged in when playing games of make-believe but unusually not yet applied to the conservation task. Our symbolic play training studies have yielded a genuine conceptual reorganization in our preschool subjects as manifested (a) in the correct judgments and explanations, (b) in the stability of the effect, and (c) in the generalization to new conservation tasks. Our series of studies also highlight some of the problems encountered when attempting to replicate findings with small

samples, while simultaneously incorporating changes in design, procedures and/or sample selection. While modifications and extensions have to be introduced in order to establish the range of phenomena, and the precise conditions that are effective in eliciting them, negative findings obtained when altering the conditions ought to be treated with utmost caution. Alterations of design ought not to be construed as replication studies.

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